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## Center for Astrophysics

60 Garden Street  
Cambridge, Massachusetts 02138

Harvard College Observatory  
Smithsonian Astrophysical Observatory

RECEIVED

February 10, 1993

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Ms. Donna R. Searcy  
Secretary  
Federal Communications Commission  
1919 M Street, NW  
Washington, DC 20554

FCC MAIL ROOM

RE: RM 8165 (Arecibo Observatory)

Dear Ms. Searcy,

I am writing to you to endorse in the strongest way possible the request of an amendment of the FCC's rules in order to establish a Radio Astronomy Communications Zone in Puerto Rico.

The Arecibo telescope is an unique and powerful instrument for conducting research in astrophysics, but it can only function in an environment of radio quiet at selected frequencies. The measurements made with this telescope over the past 30 years have had a major impact on our understanding of the universe. I can mention a few examples: the extensive survey of hydrogen from distant galaxies makes it possible to chart the three-dimensional distribution of these galaxies and thus the visible matter in the universe. Most of the pulsars, naturally occurring beacons from neutron stars, have been discovered at Arecibo including the first binary pulsar whose slowly decaying orbit has been carefully monitored. This decay provided the first and only evidence for the existence of gravitational radiation. The extensive observations of OH masers in the envelopes of late type stars at 1612 MHz has led to a new understanding of how stars evolve at the ends of their lives.

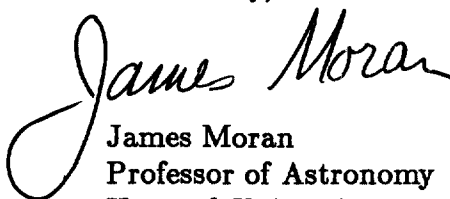
The Arecibo telescope is the most sensitive instrument in the world in its operating bands because of its enormous collecting area, which is more than five times greater than its nearest competitor. The importance of the Arecibo telescope to the scientific community is evident by the current program to improve its sensitivity which is sponsored jointly by the NSF and NASA. One of the improvement projects involves the construction of a screen around the reflector which will reduce pickup from the ground and also unwanted man-made interference. The telescope will remain a world-class instrument for at least another twenty years. The citizens of Puerto Rico and of all the U.S. can be proud of this instrument and the discoveries that are being made with it.

I have spent my entire career in radio astronomical research and the Arecibo telescope has played an important role for me. All the work on masers has been critically important to my research. I have also served on the Observatory's advisory committee. Coping with interference has always been a major issue at the committee meetings. The impact of interference, such as that caused by the Russian Glonast satellites operating at 1612 MHz, has been very great.

Radio quiet is a precious resource, that once lost is very difficult to regain. The proposed Radio Astronomy Communications Zone, which would provide a formal way to notify the Observatory of any proposed new transmitters, is an important step to protecting our ability to carry out important research. The amended Rule will provide a communication mechanism between the astronomers and other users of the radio spectrum that will allow them to co-exist and meet their respective requirements with a minimum of conflict.

I urge the passage of this amendment.

Yours truly,

A handwritten signature in cursive script that reads "James Moran". The signature is written in dark ink and is positioned above the printed name and title.

James Moran  
Professor of Astronomy  
Harvard University